Claims

1. (currently amended) A method, comprising:

providing a first frequency-modulated light signal having a first modulation index;

providing a second frequency-modulated light signal having a second modulation index;

controlling a difference between the first modulation index and the second modulation index; ~~and~~

combining the first frequency-modulated light signal and the second frequency-modulated light signal to reduce residual amplitude modulation in accordance with the difference;

processing at least a portion of the combined light signals; and

storing results of the processing.

2. (original) The method of claim 1, which includes generating the first frequency-modulated light signal and the second frequency-modulated light signal from the same laser light source.

3. (original) The method of claim 1, wherein the first frequency-modulated light signal and the second frequency-modulated light signal have a common modulation frequency and different carrier frequencies.

4. (original) The method of claim 1, which includes directing frequency-modulated light to a substance to obtain spectroscopic information, the first frequency-modulated light signal being received from the substance as a substance-altered form of the frequency-modulated light.

5. (currently amended) The method of claim 4, wherein the first frequency-modulated light signal carries the spectroscopic information with the residual amplitude modulation, and ~~which includes~~ wherein the processing comprises:

detecting a combination of the first frequency-modulated light signal and the second frequency-modulated light signal; and

generating an output signal based on said detecting, the output signal being representative of the spectroscopic information with the residual amplitude modulation reduced.

6. (original) The method of claim 4, wherein said controlling includes:

detecting the first frequency-modulated light and the second frequency-modulated light signal;

generating a feedback signal based on said detecting; and

regulating generation of the second frequency-modulated light signal from an output device responsive to the feedback signal.

7. (currently amended) The method of claim 6, wherein the first frequency-modulated light signal and the second frequency-modulated light signal have a common modulation frequency, the second frequency-modulation index is smaller than the first modulation index, and the first frequency-modulated light signal carries the spectroscopic information with the residual amplitude modulation, ~~and further comprising~~ wherein the processing comprises:

detecting a combination of the first frequency-modulated light signal and the second frequency-modulated light signal; and

generating an output signal based on said detecting, the output signal being representative of the spectroscopic information with the residual amplitude modulation reduced.

8. (currently amended) A method, comprising:

providing frequency-modulated light carrying information with undesired amplitude modulation, the frequency-modulated light being provided with a first modulation index;

generating other light that is frequency-modulated with a second modulation index, the other light having a carrier frequency different than the frequency-modulated light; ~~and~~

at least partially nulling the undesired amplitude modulation with the other light to improve detection of the information, wherein the first modulation index is larger than the second modulation index;

detecting at least a portion of the at least partially nulled light signal to produce a detector signal;

processing the detector signal; and

storing results of the processing.

9. (canceled)

10. (original) The method of claim 8, wherein the information corresponds to one or more spectroscopic characteristics of a material from which the frequency-modulated light is received.

11. (original) The method of claim 8, which includes generating the frequency-modulated light and the other light from the same laser light source.

12. (original) The method of claim 8, wherein the frequency-modulated light and the other light have a common modulation frequency.

13. (canceled)

14. (original) The method of claim 8, wherein said at least partially nulling includes combining the frequency-modulated light and the other light.

15. (original) The method of claim 8, which includes providing feedback as a function of a difference between the first modulation index and the second modulation index to regulate generation of the other light.

16. (original) An apparatus, comprising:

a modulated light source subsystem to provide a first frequency-modulated light with a first modulation index and a second frequency-modulated light with a second modulation index;

an evaluation region to receive a substance for evaluation and direct the first light signal to the substance, the first light signal being altered by the substance when received in the region to provide a third frequency-modulated light signal carrying spectroscopic information about the substance and residual amplitude modulation; and

a first detector responsive to the second light signal and a third light signal to provide an output representative of the spectroscopic information with the residual amplitude modulation reduced in accordance with a difference between the first modulation index and the second modulation index.

17. (original) The apparatus of claim 16, further comprising a feedback device responsive to the first light signal and the second light signal to control the difference between a first modulation index and the second modulation index.

18. (original) The apparatus of claim 17, further comprising a second detector operable to detect a combination of the first light signal and the second light signal, the first light detector being coupled to the feedback device.

19. (original) The apparatus of claim 18, further comprising:

a first beam splitter to direct the first light signal to both the first detector and the interrogation region; and

a second beam splitter to direct the second light signal to both the first detector and the second detector.

20. (original) The apparatus of claim 16, wherein the modulated light source subsystem includes at least one laser.

21. (original) The apparatus of claim 20, wherein the modulated light source subsystem includes at least one of an acousto-optic modulator and an electro-optic modulator.

22. (original) The apparatus of claim 16, wherein the modulated light source subsystem includes at least two lasers.

23. (original) The apparatus of claim 22, further comprising a servo device to maintain a carrier frequency difference between the first light signal and the second light signal.

24. (original) The apparatus of claim 16, wherein the modulated light source subsystem is operable to provide the first modulation index at a higher value than the second modulation index.

25. (currently amended) An apparatus, comprising:

means for interrogating a material to provide a first frequency-modulated light signal having a first modulation index, the first frequency-modulated light carrying spectroscopic information with residual amplitude modulation;

means for generating a second frequency-modulated light signal having a second modulation index;

means for combining the first frequency-modulated light signal and the second frequency-modulated light signal; ~~and~~

means for reducing the residual amplitude modulation in accordance with a difference between the first modulation index and the second modulation index to improve detection of the spectroscopic information;

means for detecting the spectroscopic information;

means for processing the spectroscopic information; and

means for storing results of the processing.

26. (new) The method of claim 1, wherein processing at least a portion of the combined light signals comprises detecting at least a portion of the combined light signals.

27. (new) The method of claim 1, wherein one or more of the following are performed before or after processing at least a portion of the combined light signals:

analyzing spectroscopic information;

outputting spectroscopic information;

displaying spectroscopic information;

indicating spectroscopic information;

storing spectroscopic information; and

transmitting spectroscopic information.